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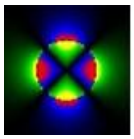
Magnet Division Specification

Specification Number: SMD-APUL-4002

Revision: A



Superconducting
Magnet Division

Sensor Testing Procedures – APUL Dipole Magnet Assemblies

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Revision History

- Rev A:

1 Scope:

This specification establishes the procedure for In-Process testing of Yoke Iron Cryogenic Thermometer Assemblies & Passive Heater Cryogenic Temperature Sensors used in APUL dipole magnets.

2 Applicable Documents:

The following documents, in effect on the date of issue of this specification, form a part of this specification:

SBMS Subject Area	'Calibration'
SMD-MAG-1003	Discrepancy Reporting Procedure
14060199	Passive Heater Temperature Sensor
14010235	Yoke Temperature Assembly

3 Requirements:

3.1 Material/Equipment

Digital Volt Meter:

- Capable of "4 Wire" Resistance Measurement.
- Maximum Resistance (or O.L. - "Over Load") - 20 Megohms or greater.

3.2 Safety Precautions

N/A

3.3 Procedure

3.3.1 Yoke Iron Temperature Sensor (14010235)

CAUTION

To avoid possible damage to the sensor, do not exceed manufacturer's voltage & current limits while testing

3.3.1.1 Perform resistance checks as noted in table 1. Verify readings are within ranges noted in table.

Table 1 - Temperature Sensor Resistance Values

	Lead Color	**Range (Ω)**
R (U^+, U^-, I^+, I^-)		60.0 -70.0
R (U^-, I^-)	Red ↔ Green	5.8 - 8.8
R (U^+, I^+)	Black ↔ Yellow	

3.3.1.2 Perform resistance test of each sensor & lead wire combination to ground. Resistance to be > 20MΩ.

3.3.1.3 After completing measurements, short the leads of each sensor by twisting its wires together. Insulate from ground. Do this for each sensor independently.

3.3.2 Passive Heater Temperature Sensor (14060199)

CAUTION

To avoid possible damage to the sensor, do not exceed 1 Volt and do not exceed 100mA current while testing Passive Heater Temperature Sensors

3.3.2.1 Perform a "4 wire" resistance check of each Passive Heater temperature sensor. Value shall be within +/- 5Ω of manufacturer supplied reading for that particular unit.

3.3.2.2 Perform continuity check between I+ & V+ leads of each Passive Heater temperature sensor. Repeat for I - & V - leads.

3.3.2.3 Perform resistance test of each Passive Heater Temperature sensor & lead wire combination to ground. Resistance to be > 20 mega-ohm.

4 Quality Assurance Provisions:

4.1 The Quality Assurance provisions of this procedure require that the technician shall be responsible for performing all assembly operations in compliance with the procedural instructions contained herein and the recording of the results on the production traveler.

4.2 The technician is responsible for notifying the technical supervisor and/or the cognizant engineer of any discrepancies occurring during the performance of this procedure. All discrepancies shall be identified and reported in accordance with SMD-MAG-1003.

4.3 Measuring and test equipment used for this procedure shall contain a valid calibration label in accordance with the SBMS Subject Area ‘Calibration’.